Hyperbola - Class XI

Related Questions with Solutions

Questions

Quetion: 01

Find the equation of hyperbola whose centre is (1, 0); focus is (6, 0) and transverse axis is 6.

A. $\frac{(x-1)^2}{9} - \frac{y^2}{16} = 1$

B. $\frac{x^2}{9} - \frac{y^2}{16} = 1$

C. $\frac{x^2}{9} - \frac{(y-1)^2}{16} = 1$

D. $\frac{(x+1)^2}{9} - \frac{y^2}{16} = 1$

Solutions

Solution: 01

Equation of hyperbola with centre [1, 0] is

$\frac{(x-1)^2}{a^2} - \frac{y^2}{b^2} = 1$ ..... [i]

Given $2a = 6 \Rightarrow a = 3$ and ae = distance between focus and centre = 5

Hence $e = \frac{5}{3}$

$b^2 = a^2\left(e^2 - 1\right) = 9 \times \left(\frac{25}{9} - 1\right) = 16$

$\Rightarrow b = 4$

$\therefore$ Equation [i] becomes $\frac{(x-1)^2}{9} - \frac{y^2}{16} = 1$

Correct Options

Answer:01

Correct Options: A